

logical matrix of factors impinging on the success of a species. By doing this, his book is motivation for collaboration between insect physiologists, insect ecologists, and mathematical modelers. It is only through such collaboration that we can expect to make progress toward a more complete understanding of diapause.

A final note on the cost of this book is probably in order. Translations of technical books with limited distribution are notoriously expensive. At a price of \$100 for a book of 187 pages (including References and Index) "Insect Development" is no exception to this rule. I for one, however, am glad that Springer-Verlag is willing to undertake such ventures, and if such prices are necessary, then so be it. I anticipate that I will refer often to this book in my work involving diapause and insect seasonality. I also anticipate significant insights will be gained into procedural methods for modeling such processes. My advice to serious researchers in the area of diapause and insect ecology is to buy the book and then make it widely available to students and others who might find it prohibitively expensive.—*Jesse A. Logan, Department of Entomology and Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061.*

LITERATURE CITED

Garfield, E. 1988. Is the American scientific press provincial? *Current Contents* 19(34):3-7.

J. New York Entomol. Soc. 97(2):248-249, 1989

The Evolution of Insect Life Cycles.—F. Taylor and R. Karban (eds.). 1986. Springer-Verlag, New York, 287 pp. \$64.00.

This book is a collection of sixteen papers on the evolution of life cycles in insects. The papers are modified from a symposium at the XVII International Congress of Entomology in 1984. The stated goal of the volume is ". . . to provide a comprehensive view of current research on insect life cycles . . ." The book is organized into four sections: Geographical Patterns in Insect Life Cycles (5 papers), Diversity of Life Cycle Patterns (6 papers), Mechanisms of Insect Life Cycle Evolution (4 papers) and Concluding Remarks (1 paper); however, many of the papers are appropriate for more than one section.

The book addresses several important issues in the study of insect life histories, among them the reality of environmental uncertainties which can produce considerable year to year variation in selection pressures. Several chapters discuss this point in both theoretical and empirical terms, as well as the consequences for genetic variability of life history traits. Several other papers consider exceptions to generalizations about life histories. For example, A. Shapiro reports that r- and K-type traits do not consistently occur at a taxonomic level; however, they do correspond to what is known of the ecology of the organisms and the presumed selection pressures.

Several of the chapters discuss genetic aspects of life histories. This is a crucial issue in the study of the evolution of life histories and I felt a general weakness of some of the papers was implicit assumptions about genetic systems. There seems to be a tendency for authors to infer past selection from present patterns. For example,

although few empirical studies have been able to demonstrate natural selection, in chapter 13 the ability of natural selection to affect genetic systems is given considerable weight. Not only are traits selected but their inheritance (polygenic vs. single locus heritability) is also selected. A second example is chapter 2 in which it is assumed that a correlation between ovipositor length and habitat moisture demonstrates selection balance. I feel that correlation *does not* imply causation, the role of selection needing to be rigorously demonstrated, and thus these are areas where empirical work is needed.

Several of the chapters were enjoyable and thought provoking reading, including the chapter by D. Neumann on a slow growing intertidal midge (38–95 days) in which the adults are short lived (30 minutes to a few hours); the chapter by Valarie Brown which includes an amazing amount of data on the effect of plant succession on insect life cycle strategies; the review of variation in diapause induction by critical photoperiod as a function of latitude by Taylor and Spaulding; and the chapter by Lounibos and Machado-Allison describing parental care in mosquitos and demonstrating that rainfall is a selective pressure for maternal egg brooding.

The volume summarizes a broad range of research in insect life history evolution. I feel its strength is that it not only suggests areas for future research but I came away with many ideas of how such research needs to be conducted to provide contributions to this area. For this reason, I recommend it to researchers of insect life cycles.—*Lori Stevens, Department of Zoology, University of Vermont, Burlington, Vermont 05405-0086.*

J. New York Entomol. Soc. 97(2):249–250, 1989

DARWIN'S INSECTS

Darwin's Insects. Charles Darwin's Entomological Notes.—K. G. V. Smith (ed.). 1987. Bulletin of the British Museum (Natural History) 14(1):1–143. Natural History Museum Publications, Cromwell Road, London SW7 5BD, U.K. £25.

This publication is a careful, painstakingly prepared, account (essentially a catalogue) of Charles Darwin's insect collections of those of his specimens that have been located in the present-day entomological holdings or various institutions with the field notes made during the voyage of the British Navy's H.M.S. *Beagle* (1831–1835), on which vessel he served as naturalist. The text is organized in 10 sections, of which five record material housed in different institutions, all in various parts of The United Kingdom, most specimens being in the collections of the British Museum (Natural History). Almost one-half of the volume (67 pages) is taken up with Darwin's entomological notes from the *Beagle* voyage and their annotation. A list of scientific names is given that are formed from the surname Darwin, and used in the *Insecta*. Two indices are included: one, of geographical place names, and names of institutions, ships and persons cited in the text; and one of names of taxa. Illustrations provided are maps showing positions of collecting localities in South America, reproductions of plates illustrating specimens of new taxa that were based on Darwin-collected